UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Fisheries Science Center
75 Virginia Beach Drive Miami, FL
33149

16 February 2005

MEMORANDUMFOR: **Wayne Swingle**

FROM: **F/SEC- Nancy B. Thompson /S/**

SUBJECT: **Red Grouper Trip and Bag Limit Advice**

In support of the Gulf Council's preparation of a regulatory amendment to the Reef Fish FMP to implement an increase in red grouper TAC and quota, shallow water grouper quota, and recreational red grouper allocation in 2006, my staff has prepared the following scientific advice. The request for this analysis was submitted to the Southeast Fisheries Science Center in December 2004 (10 Dec 2004 Memorandum from Swingle to Thompson, Received at the SEFSC on 17 Dec 2004).

Advice regarding Commercial Trip Limit Alternatives.

A range of trip limit calculations based on prior year fishery performance, as recorded in logbooks, was performed. A short paper by K. McCarthy on the topic is attached.

Advice regarding Grouper Recreational Bag Limits

Angler harvest of Red Grouper is a function of multiple factors including fishing effort, the relative abundance/availability of red grouper and management restrictions on allowable harvest per angler. Analysis completed for SECRETARIAL AMENDMENT 1 TO THE REEF FISH FISHERY MANAGEMENT PLAN TO SET A 10-YEAR REBUILDING PLAN FOR RED GROUPER provides a basis for estimating the expected change in angler harvest of red grouper (A+B1 catch) under several different bag limit scenarios. As the actual performance of the fishery under the current regulations regarding angler harvest (2 red grouper out of 5 groupers in aggregate) cannot be evaluated (these regulations became effective in mid 2004 and as such, insufficient data are available with which to examine fishery performance under the regulations). Thus, inference below is based on the analysis conducted in support of the Secretarial Amendment.

The bag limit measure adopted for red grouper is expected to provide approximately a 9% reduction in red grouper angler harvest, while impacting a small number of fishermen who might otherwise catch more than two red grouper on a trip. The bag limit measure adopted is expected to achieve a reduction in recreational red grouper harvest close to the 9.4% reduction needed for the first three-year interval of the red grouper rebuilding plan adopted in the Amended FMP. The analysis provided for the Secretarial Amendment estimated a range of expected reductions in catch (conditioned on the assumption that the

fishery will behave as it had during the years used for analysis) for bag limits ranging from 1 to 4 fish per angler trip. Those expectations are shown below:

Recreational Grouper Bag Limits

Out of the five-grouper aggregate bag limit, the maximum number that can be red grouper is:

a. 1 (28% red grouper reduction) b. 2 (9% red grouper reduction) c. 3 (3% red grouper reduction) d. 4 (1% red grouper reduction)

These results may also be used to predict increase in red grouper harvest under more liberal bag limits. Compared to the current status quo (2 out of 5 retained grouper may be red grouper), a bag of 3 would be expected to result in an increase in angler harvest of red grouper by 6.6% (=1-.97/.91); a bag of 4 would be expected to result in an increased angler harvest of red grouper by 8.8% compared to the current status quo and a bag of 5 would be expected to result in an increase in angler harvest of red grouper by up to 10% compared to the current status quo.

These expectations ignore changes in fishing effort and in relative abundance of red grouper. Increases in either (or both) of these components influencing angler catch and harvest of red grouper will amplify the expected increase in angler harvest under more liberal bag limits. If, for instance, there were an effort increase by 5% and a relative abundance of red grouper increase by 5%, coupled with a change in bag from 2 to 4 red grouper, the overall expected increase in angler harvest would be on the order of 21% compared to the period before the increases took place.

Since year 2000, there appears to have been a general increase in recreational fishing in the private/rental mode with a relatively stable or slightly declining charter effort off the Florida west coast (the predominant area and modes of fishing resulting in red grouper recreational harvest). From 2000 to 2003, there has been an increase in MRFSS-estimated private/rental angler trips of about 15% over that 3-year period (2004 estimates are preliminary, but indicate levels near those estimated for 2003). The patterns in estimated angler trips off the Florida west coast are shown in Figure 1, below. It is unknown if this pattern of increase will persist through 2006.

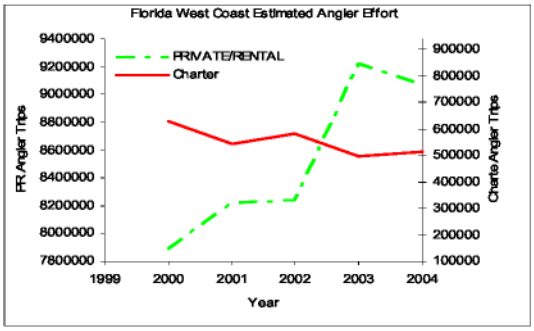

Figure 1. MRFSS estimated angler trips by mode for Florida west coast anglers between 2000 and 2004 (2004 estimates are provisional). Charterboat estimates based on "new" estimation methodology.

Nominal CPUE observations (CPUE=(A+B1+B2)/angler trips) for red grouper caught by interviewed anglers off the west coast of Florida give indication of somewhat improved abundance/availability in 2004 relative to years immediately preceding. Figure

2 shows the patterns for Charter ("new" methodology) and Private/Rental angler nominal CPUE along the west coast of Florida from 2000 to 2004 (2004 data provisional). These patterns have not been standardized relative to time, area, or targeting factors known to influence catch rates independently of fish abundance or availability and may thus be misleading relative to the degree of improvement in stock abundance. No new information about incoming year-class strength is available to permit evaluation if nearfuture abundance/availability will further improve or decline.

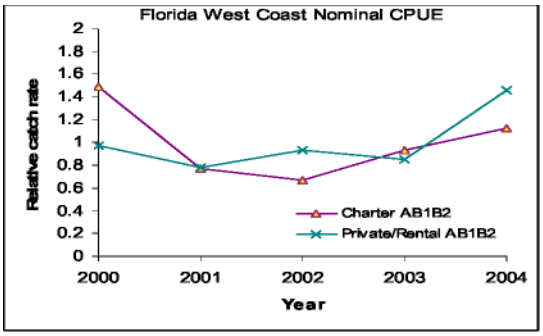

Figure 2. Average nominal CPUE = (AB1B2/angler trips) of red grouper for the years indicated from charterboat and private/rental anglers interviewed along the Florida west for the years indicated. No adjustment for factors known to affect catch rate independently of fish abundance or availability have been made.

The time-series of Gulf recreational red grouper landings since 1986 is shown in Table 1, below (note that the estimates in Table 1 are of gutted weight equivalents). In this table, values for year 2004 are considered provisional and incomplete. MRFSS estimates of harvest (A+B1 catch) are preliminary and as 2004 estimates from the Headboat Survey are not yet available, in the table, the 2004 Headboat value was carried over from the prior year. Additionally, the "old" charterboat survey method estimates are shown in the table for consistency throughout the time series (values in parentheses are "new" methodology estimates and Figure 3 compares the "old" and "new" methodology charterboat harvest estimates by year).

Table 1. Recreational Landings of Gulf Red Grouper

Year	Headboat 1000 Lbs Gutted	Charter 1000 Lbs Gutted	Private&Shore 1000 Lbs Gutted	Total 1000 Lbs Gutted
1986	124	313	1,909	2,346
1987	104	183	979	1,265
1988	105	238	2,149	2,493
1989	141	190	2,161	2,491
1990	119	454	822	1,396
1991	64	75	1,603	1,742
1992	66	333	2,542	2,941
1993	91	181	1,929	2,201
1994	70	238	1,660	1,968
1995	108	573	1,508	2,189
1996	104	179	677	959
1997	49	172	432	653
1998	56	187	514	757
1999	61	161	930	1,152
2000	67	201(699)	1,424	1,692(2,190)
2001	49	267(351)	999	1,315(1,399)
2002	39	329(298)	1,367	1,734(1,704)
2003	51	449(261)	1,036	1,536(1,348)
2004	**51**	**992(526)**	**2,487**	**3,530(3,064)**

Note: 2004 estimates provisional. The 2004 headboat value carried over from prior year. MRFSS estimates provisional and subject to change for 2004. Charterboat estimation methodology based on the "old" methodology for time-series consistency and comparability with values used in the most recent stock assessment. "New" charterboat method estimates are provided in parentheses.

Based on the above table, it is apparent that recreational landings would have exceeded provisional TACs of 1.25-1.37 mp in 4 of 5 years. As actual fishery performance under the current status quo bag limit cannot be easily evaluated, no new information is available about recent incoming recruitment strength, and since it is unclear if fishing effort will change from recent levels, predicting absolute levels of catch in 2006 under the scenarios identified is highly uncertain.

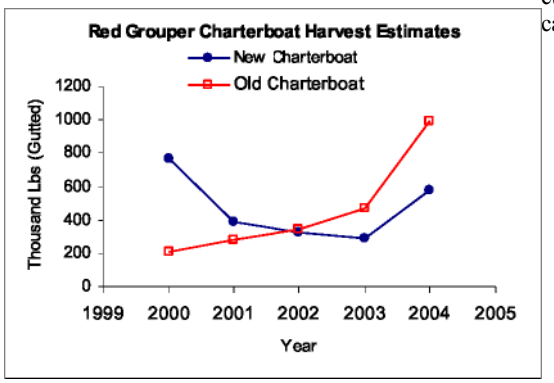

Figure 3. Comparison of "new" and "old" charterboat survey estimates of red grouper harvest in gutted (thousand) pounds. Variability in the estimates is not taken into account in this comparison.

Depending on the bag limit assumed and the assumed effectiveness of the current status quo measures for changing recreational harvest under the bag limits identified, overall change in landings could range from 91% to 110% of a recent reference year level. If one assumes that red grouper abundance/availability remains as in 2004 through 2006 and fishing effort also remains at the 2004 level, 2006 recreational harvest could range from approximately 2.7-3.9mp, depending on catch estimation methodology and how perfectly the current status quo bag limit affected landings in 2004. If, on the other hand, one assumes that red grouper abundance/availability returned to the 2001 level and fishing effort also returned to the 2001 level by 2006, then recreational landings could range from approximately 1.2-1.4mp, values consistent with the recreational allocation alternatives identified in Table 2 of your 10 December memorandum.

Attachment

Cc: F/SEC - Poffenberger, Chester, Turner, Scott, McCarthy, Merriner F/SER – Crabtree, Fay, Steele GMFMC - Kennedy

Grouper Trip Limit Analysis
(Prepared in Response to a Request from the Gulf Council)

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February, 2005

Introduction

In support of the Gulf Council's preparation of a regulatory amendment to the Reef Fish FMP to implement an increase in red grouper TAC and quota, shallow water grouper quota, and recreational red grouper allocation in 2006, the following analysis was prepared. The request for this analysis was submitted to the Southeast Fisheries Science Center in December 2004 (10 Dec 2004 Memorandum from Swingle to Thompson, Received at the SEFSC on 17 Dec 2004).

Methods and Results

Reef fish logbook data for the years 2001-2004 were used to evaluate the effects that four trip limit scenarios might have on shallow water grouper landings. The 20012004 data were used to estimate the dates when shallow water and red grouper quotas would have been reached had the trip limit scenarios been in place during those years. These calculations assume that fishing practices would not have changed under the various scenarios. In each of the scenarios, initial trip limits were reduced on August first or before if 50% of the red grouper or shallow water grouper quota was reached. A further reduction in trip limits occurred on October first or before if 75% of the red grouper or shallow water grouper quota was reached. The scenarios examined were: no trip limits; a 10,000 pound limit reduced to 7,500 pounds with a final reduction to 5,500 pounds; an 8,000 pound limited reduced to 6,000 then 4,500 pounds; and a 6,000 pound limit reduced to 4,500 pounds with a second reduction to 3,500 pounds.

Only trips reporting landings of species in the grouper management unit within the Gulf of Mexico Reef Fish Fishery Management plan were included in these calculations. Likewise, only data from trips reported for the Gulf of Mexico were considered. For each trip, the total grouper landed catch in pounds gutted weight was summed. It was assumed that reported landings in excess of the trip limit under consideration would not have been caught and total grouper landings for such trips was truncated at the trip limit maximum. Where landed catch was truncated at the trip limit, the proportions of deep water, shallow water, and red grouper catch were assumed to be identical to those reported in the logbook data (e.g. for a 8,000 pound trip limit where 15,000 pounds of grouper was reported, the percentages of shallow water, deep water, and red grouper were held constant when the landings were truncated at 8,000 pounds). The cumulative landings for each fishery (shallow water, red, and deep water) were calculated and the dates when 50%, 75%, and 100% of red grouper and shallow water grouper quotas were reached were determined. Once the deep water grouper quota was reached, only shallow water and red grouper landings were included in the trip limit

calculations. Results of these calculations are presented in the following tables for Scenarios 1-4 identified in the Swingle to Thompson memorandum. The Red Grouper TAC and Commercial Quota Alternatives (gutted weight) held within each Scenario Table are as identified in Table 1 of the Swingle to Thompson memorandum.

Trip limit threshold dates were similar for 2001 and 2002 reef fish logbook data. With no trip limits imposed (Scenario 1), the threshold dates for reaching the shallow water and red grouper quotas were, not surprisingly, extended as quotas were increased (Alternatives 1-3, Scenario Table 1). Quotas would have been reached in both 2001 and 2002 had this scenario and any of the TAC/Quota Alternatives been in place. For trip limit Scenario 2 (10,000 pound initial trip limit), the 2001 and 2002 fishing seasons would have been extended from six to 21 days beyond the quota threshold dates in Scenario 1 (Scenario Table 2). Under TAC/Quota Alternative 2, the shallow water grouper quota would not have been reached in 2002 and neither shallow water nor red grouper quotas would have been reached during 2001 or 2002 under Alternative 3. Deep water grouper quota threshold dates were also extended beyond those in Scenario 1 by a few days (2004 data) to more than three weeks (2001 data).

Trip limit Scenarios 3 (8,000 pound initial trip limit) and 4 (6,000 pound initial trip limit) would have extended the 2001 and 2002 shallow water and red grouper fisheries throughout the year under all TAC/Quota Alternatives except for Alternative 1 in Scenario 3 (Scenario Tables 3 and 4). Had Scenario 3 been in place during 2001 and 2002, quota threshold dates would have been 14 to 35 days beyond those of Scenario 1 under TAC/Quota Alternative 1 (Scenario Table 3). Under Scenario 4, the final reduction in trip limits would have been triggered (75% of quota reached), but would not have been necessary to extend the fishing season to the end of the year during 2001 and 2002 except under Alternative 1 in 2001 (Scenario Table 4). As with Scenario 2, deep water grouper quota threshold dates under Scenarios 2 and 3 were extended beyond those in Scenario 1. For example, the deep water grouper quota would have been reached five days later under Scenario 3 Alternative 1 than under the same Alternative in Scenario 1. The deep water quota would not have been reached during 2002 under any TAC/Quota Alternative for Scenarios 3 and 4.

Neither the shallow water grouper nor the red grouper quota was reached in 2003. Obviously, all trip limit scenarios and TAC/Quota Alternatives would have resulted in landings below the deep water and red grouper quotas had they been implemented in 2003. Threshold dates for 50% and 75% of shallow water and red grouper quotas for the 2004 data were between those for the 2001 and 2002 data (earliest threshold dates) and the 2003 data (latest threshold dates). The reef fish logbook data was incomplete for 2004, therefore, determination of threshold dates for meeting 100% of the shallow water and red grouper quotas could not be made for that year.

Scenario Table 1. Trip limit threshold dates for Scenario 1; no trip limits. NA=not available because data for 2004 are incomplete, --- = quota would not have been reached.

Alternative 1 Shallow-water quota 50%	2001 June 16	2002 June 15	2003 July 15	2004 June 27
Red grouper quota 50% Shallow-water quota 75%	June 24 Sept 5	June 21 Sept 1	July 23 Oct 24	July 1 Sept 26
Red grouper quota 75%	Sept 1	Aug 22	Oct 16	Sept 1
Shallow-water quota 100%	Dec 7	Dec 1	---	NA
Red grouper quota 100% Deep-water quota 100%	Nov 27 Oct 31	Nov 11 Nov 27	--- July 29	NA June 13
Alternative 2 Shallow-water quota 50%	 June 21	 June 21	 July 23	 July 3
Red grouper quota 50% Shallow-water quota 75%	July 2 Sept 21	June 30 Sept 13	Aug 4 Nov 9	July 8 Oct 4
Red grouper quota 75%	Sept 22	Sept 4	Nov 10	Oct 2
Shallow-water quota 100%	Dec 17	Dec 15	---	NA
Red grouper quota 100% Deep-water quota 100%	Dec 15 Oct 31	Dec 5 Nov 27	--- July 29	NA June 13
Alternative 3 Shallow-water quota 50%	 June 25	 June 24	 July 27	 July 5
Red grouper quota 50% Shallow-water quota 75%	July 6 Sept 24	July 2 Sept 20	Aug 9 Nov 16	July 14 Oct 6
Red grouper quota 75%	Sept 27	Sept 12	Nov 18	Oct 7
Shallow-water quota 100%	Dec 22	Dec 19	---	NA
Red grouper quota 100%	Dec 22	Dec 14	---	NA
Deep-water quota 100%	Nov 1	Nov 29	Aug 2	June 14

Scenario Table 2. Trip limit threshold dates for Scenario 2; 10,000-7,500-5,500 trip limits. NA=not available because data for 2004 are incomplete, --- = quota would not have been reached. Trigger dates are highlighted in yellow.

Alternative 1 Shallow-water quota 50%	2001 June 18	2002 June 17	2003 July 20	2004 June 29
Red grouper quota 50% Shallow-water quota 75%	June 25 Sept 9	June 24 Sept 11	July 25 Oct 21	July 3 Sept 25
Red grouper quota 75%	Sept 3	Aug 30	Oct 13	Sept 1
Shallow-water quota 100%	Dec 14	Dec 18	---	NA
Red grouper quota 100%	Dec 4	Dec 2	---	NA
Deep-water quota 100%	Nov 22	Dec 17	Aug 4	June 16
Alternative 2 Shallow-water quota 50%	June 24	June 24	July 27	July 5
Red grouper quota 50%	July 3	July 2	Aug 6	July 11
Shallow-water quota 75%	Sept 23	Oct 6	Nov 4	Oct 13
Red grouper quota 75%	Sept 23	Sept 19	Nov 3	Oct 15
Shallow-water quota 100%	Dec 30	---	---	NA
Red grouper quota 100%	Dec 21	Dec 23	---	NA
Deep-water quota 100%	Nov 22	Dec 17	Aug 4	June 16
Alternative 3 Shallow-water quota 50%	June 26	June 27	July 30	July 8
Red grouper quota 50%	July 8	July 6	Aug 12	July 16
Shallow-water quota 75%	Sept 27	Oct 9	Nov 10	Oct 7
Red grouper quota 75%	Sept 29	Oct 7	Nov 12	Oct 9
Shallow-water quota 100%	---	---	---	NA
Red grouper quota 100%	---	---	---	NA
Deep-water quota 100%	Nov 24	Dec 18	Aug 5	June 17

Scenario Table 3. Trip limit threshold dates for Scenario 3; 8,000-6,000-4,500 trip limits. NA=not available because data for 2004 are incomplete, --- = quota would not have been reached. Trigger dates are highlighted in yellow.

Alternative 1 Shallow-water quota 50%	2001 June 20	2002 June 19	2003 July 23	2004 July 4
Red grouper quota 50% Shallow-water quota 75%	June 27 Sept 13	June 26 Sept 19	July 28 Oct 28	July 6 Oct 5
Red grouper quota 75%	Sept 9	Sept 4	Oct 18	Sept 24
Shallow-water quota 100%	Dec 21	Dec 29	---	NA
Red grouper quota 100%	Dec 13	Dec 16	---	NA
Deep-water quota 100%	Nov 27	---	Aug 5	June 18
Alternative 2 Shallow-water quota 50%	June 26	June 27	July 30	July 9
Red grouper quota 50%	July 6	July 4	Aug 9	July 18
Shallow-water quota 75%	Sept 27	Oct 9	Nov 6	Oct 13
Red grouper quota 75%	Sept 27	Oct 1	Nov 10	Oct 11
Shallow-water quota 100%	---	---	---	NA
Red grouper quota 100%	---	---	---	NA
Deep-water quota 100%	Nov 26	---	Aug 5	June 18
Alternative 3 Shallow-water quota 50%	June 28	June 30	Aug 3	July 14
Red grouper quota 50%	July 11	July 8	Aug 17	July 23
Shallow-water quota 75%	Oct 1	Oct 12	Nov 27	Oct 21
Red grouper quota 75%	Oct 3	Oct 11	Nov 28	Oct 23
Shallow-water quota 100%	---	---	---	NA
Red grouper quota 100%	---	---	---	NA
Deep-water quota 100%	Nov 26	---	Aug 6	June 20

Scenario Table 4. Trip limit threshold dates for Scenario 4; 6,000-4,500-3,500 trip limits. NA=not available because data for 2004 are incomplete, --- = quota would not have been reached, * = scenarios in which the reduction to a 3,500 pound trip limit would not have been required to remain under quota for the year. Trigger dates are highlighted in yellow.

Alternative 1 Shallow-water quota 50%	2001 June 27	2002 June 27	2003 July 31	2004 July 9
Red grouper quota 50% Shallow-water quota 75%	July 4 Sept 28	July 2 Oct 9	Aug 6 Nov 16	July 12 Oct 13
Red grouper quota 75%	Sept 24	Sept 19	Nov 7	Oct 5
Shallow-water quota 100%	---	--- *	--- *	NA
Red grouper quota 100%	---	--- *	--- *	NA
Deep-water quota 100%	Dec 15	--- *	Aug 14	June 30
Alternative 2				
Shallow-water quota 50%	July 3	July 3	Aug 7	July 18
Red grouper quota 50% Shallow-water quota 75%	July 16 Oct 9	July 10 Oct 16	Aug 20 Nov 27	July 24 Oct 25
Red grouper quota 75%	Oct 12	Oct 13	Dec 9	Oct 26
Shallow-water quota 100%	--- *	--- *	--- *	NA
Red grouper quota 100%	--- *	--- *	--- *	NA
Deep-water quota 100%	Dec 12	--- *	Aug 14	June 30
Alternative 3				
Shallow-water quota 50%	July 6	July 5	Aug 12	July 22
Red grouper quota 50% Shallow-water quota 75%	July 21 Oct 22	July 17 Oct 22	Aug 25 Dec 4	July 27 Oct 28
Red grouper quota 75%	Oct 26	Oct 21	Dec 7	Oct 31
Shallow-water quota 100%	--- *	--- *	--- *	NA
Red grouper quota 100%	--- *	--- *	--- *	NA
Deep-water quota 100%	Dec 13	--- *	Aug 17	July 1